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LECANACTIS ILLECEBROSA var. **megaspora**, var. nov.

Thallus whitish or white, thin, more or less pulverulent, K—, C—. Apothecium medium in size, from brown soon blackening, plane at first, then convex, or the larger ones umbonate, with a thin more or less persistent margin, disk naked or white-pruinose, the margin for the most part epruinose. Spores, eight in each ascus, fusiform, one–three septate, the cells regular, 28–33 x 5–6μ hymenium colorless, hypothecium brown, paraphyses distinct, tips dark, hymenial gel. with I. + wine-red.

On cedar bark, Near Elwha P. O., Wash., No. 1765.

Related to the species through its thin, apothecial margin, fusiform spores, color and consistency of thallus and reaction with Iodine. Differentiated in the color of its larger apothecia, and larger spores. Type specimen in herb. Merrill; co-type in Mr. Foster's collection.

OPEGRAPHA VARIA var. LUTESCENS Mudd Man., p. 230.

Thallus variously whitish or sordid. Apothecia as in the species, but with the margins greenish or yellowish-pruinose. Spores fusiform or with one end rounded, five septate, 25–29 x 7μ.

On maple bark, Renton, Wash., No. 2086. I know of no other record for this Country.

VERRUCARIA LAEVATA var. NIGRITA Leight. Li. Fl. G. Brit. ed. III, p. 449.

Thallus blackish, smooth, rimulose. Apothecia immersed in the thallus, only the apices visible, rather numerous and not large. Spores ellipsoid, simple, 14–23 x 7–10μ.

On rocks touched by the waters of Hoods Canal, Hoodsport, Wash., No. 2130. No previous record found for America.

ROCKLAND, MAINE.

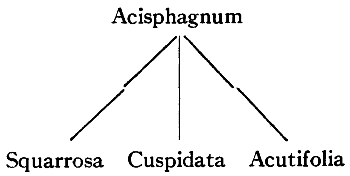
NOTES ON NORTH AMERICAN SPHAGNUM. V

A. LEROY ANDREWS

The Section Acisphagnum Carl Müller

This large section shows, as already intimated, the greatest differentiation of structures: stem and perichaetial leaves, antheridial leaves, leaves of pendent branches, leaf-border, cortical cells of stem and branches, all mark the section as representing a higher stage of development than the preceding ones. That it embraces a greater number of species and that these, while varying much among themselves, present the most difficult problems of distinction and relationship is hardly to be wondered at. The most distinctive character of the section as a whole is the differentiation of retort-cells in the branch-cortex. It may be further noted that the antheridia are borne on catkin-like parts of the spreading branches with antheridial leaves usually pigmented red or brown according to the species, these leaves differing from the other branch-leaves frequently also in size and shape, in pores and particularly in that the hyaline cells of the lower part of the leaf lack pores and fibrils. The branch-leaves are regularly bordered, normally by two (sometimes more) rows of long narrow cells.

The species are widely distributed over the whole world. Phylogenetically at the head of the section stand, as it seems to me, some half dozen species, sharply distinct from each other, but showing at same time a certain kinship. There must then have been a considerable loss of ancestral forms. All of the species last referred to are boreal in their distribution. Some of them have given rise to considerable lines of development, including species that have achieved a much wider distribution and themselves thrown off secondary derivatives of more restricted range, while other have remained isolated and unproductive. Whether one regards the last as monotypic "groups" or includes them in other groups with which they show the closest relationship is largely a matter of individual choice. It is then in no substantial disagreement with Schliephacke's and Russow's arrangement of the European species of *Sphagnum* (Warnstorf's arrangement of the non-European species is, as already noted, unnatural) that I divide the American forms of *Acisphagnum* into three groups: *Squarrosa*, *Cuspidata*, *Acutifolia*. Where this involves any deviation from current usage my reasons will be given in the discussion of the individual species. It may be said that the form (in section) of the chlorophyll cells of the leaves can not be used as an absolute diagnostic character of the group, as the original type of cell with central lumen and approximately equal exposure on both surfaces of the leaf may occur within any group and actually does occur in them all, and there is often some little variation within a single species. The highly specialized stem-leaves and perichaetial leaves seem to me to furnish the most readily perceptible indications of group-relationship. To name the one character that appears most conclusive, not as a practical means of separating the groups but in its real indication of natural relationships: it is the disposition of those membrane-gaps in the hyaline cells of stem-leaves and perichaetial leaves commonly characterized as "resorption" of the membrane. The stem-leaves of the species of *Squarrosa* show such "resorption" mostly on the outer surface (as in *Inophloea*), those of *Cuspidata* and *Acutifolia* mostly on the inner surface (as in *Malacosphagnum*). Certain of the phylogenetically old species show resorption of the membrane on both surfaces, which accounts for the characteristic lacerate condition of the stem-leaves of these species. In the perichaetial leaves such membrane-resorption can be present only in case at least a portion of the leaf shows the normal leaf-structure of alternating hyaline and chlorophyll cells and then only in such hyaline cells as are non-fibrillose. When these conditions are present, and they are in most species of *Acisphagnum*, one will find in *Squarrosa* membrane-gaps on the outer surface, in *Cuspidata* on the inner, in *Acutifolia* on neither. The relationship of the three groups could be illustrated approximately thus:



The Group Squarrosa Schliephacke

The group-name *Squarrosa* seems to have been first used by Schliephacke[1] and has persisted mostly with the same content since. My only change is the addition of *S. Ångströmii* which has been passed from group to group and by Russow with clearer insight made a group by itself: *Truncata.*[2] The most noteworthy characters of the group *Squarrosa* are to be found in the stem-leaves and perichaetial leaves as already noted. Its distribution is circumpolar, restricted to the northern hemisphere, the southern limit in North America corresponding roughly with the limit of glaciation.

10. *Sphagnum Ångströmii* Hartmann, 1858. The similarity of the stem-leaves of this species with those of *S. squarrosum* and *S. teres* will be apparent to anyone from the excellent illustrations of Roth,[3] and a careful examination will show that this generally similar effect is accompanied, probably in part conditioned by a similar tendency in the resorption of the membrane of the hyaline cells, these species being unique among *Litophloea* in showing a great resorption upon the outer surface of the stem-leaves with very little upon the inner. The perichaetial leaves of *S. teres* and *S. squarrosum* are still more unique among *Litophloea* in that they show throughout their whole extent the normal network of chlorophyll and hyaline cells with fibrils completely lacking and with general resorption of membrane on the outer surface. A fruiting specimen of *S. Ångströmii* from the Sullivant herbarium, loaned me through the kindness of Professor Farlow, showed perichaetial leaves with the two kinds of cells differentiated in the upper and middle portions, where the hyaline cells were without fibrils and had their membrane resorbed on the outer surface, corresponding then in this last respect with the other two species. Of course the tendency to uniform narrow cells in the lower part of perichaetial and stem-leaves of *S. Ångströmii*, the different pores and chlorophyll cells of its branch-leaves, and its different gross appearance indicate that its relationship to the other two species is not an extremely close one, probably not closer for example than that between *S. teres* and *S. Girgensohnii*, but that its nearest affinity is with *S. teres* and S. *squarrosum* seems indubitable. It is to one familiar with Sphagnum recognizable immediately in the field by its generally yellow coloration and the effect produced by its large but relatively short leaves, a gross effect quite intermediate between that of the species of *Inophloea* and of most species of *Acisphagnum*, while its coloration and habit is hardly that of *Malacosphagnum*. If one is tempted to confuse it with *Inophloea*, which is most likely to be the case, a hand-lens is sufficient to distinguish its broadly truncate leaf-apices from the cucullate ones of *Inophloea*. It is known in North America from two collections, both mentioned by Warnstorf in his last book:[4] Hall Island in Bering Sea, collected by Trelease;[5] Yukon, collected by J. M. Macoun; the last at about 64° north latitude, the first

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[1] Beiträge zur Kenntnis der Sphagna 413. 1865.

[2] Zur Anatomie der Torfmoose 29. 1887. Russow had previously (Beiträge zur Kenntnis der Torfmoose 34. 1865.) included in *Truncata* two other species.

[3] Die europäischen Torfmoose, pl. IV, fig. 3a; pl. V, figs. 1a, 2a.

[4] Pflanzenreich **51**: 139. 1911.

[5] Cf. Harriman Alaska Series of the Smithsonian Institution, V, 332. 1910.

at slightly above 60°. I have seen a portion of Trelease's collection in the herbarium of the New York Botanical Garden, a portion of that of Macoun was kindly given me by Warnstorf. That the species has not yet been found in Greenland is remarkable. In Europe and Asia it is not altogether uncommon in the proximity of the Arctic Circle, the only locality at less than 60° north latitude being a somewhat isolated station discovered by Russow at Kasperwiek in Esthonia (Russia),[1] and this apparently only between the 59th and 60th parallels. Its distribution in Scandinavia is admirably shown by Dusen's map.[2] During the summer of 1912 I was so fortunate as to find the species in Norway and at the same time to somewhat extend its range of known distribution in that country. It was noted in several tufts on the mountain side near the Hotel Vatnahalsen, a short distance from the station Myrdal on the railroad Kristiania-Bergen, and specimens taken as a record. This station is in approximately 60° 30′ north latitude, the most southerly in Norway hitherto having been in the Gudbrandsdal at about 61° 50′ north latitude, an extension then of over a degree of latitude. It is also remarkable as being on the western side of the Norwegian watershed or divide, the species in Norway seeming to avoid the proximity of the Atlantic Ocean.

(Concluded in September Number)

NINTH PUBLIC MEETING OF THE SULLIVANT MOSS SOCIETY

According to the announcement in the May BRYOLOGIST our Society was the guest of the Brooklyn Botanic Garden and the Central Museum on Saturday, May 24th. The weather was somewhat uncertain, but the real business of the day was not interfered with by the showers which fell at intervals.

Miss Susan Hutchinson, Librarian of the Central Museum, placed the Periodical Room at our service for the day, arranged for our inspection rare and interesting books, and made a most delightful hostess. The first item on our program was given by Dr. Grout, in the Assembly Hall of the Museum Building, it being an abridgment of his "Lantern Talk on the Mosses." After this was over we adjourned to the cosy Library Room and Dr. Evans, taking the chair, presented in brief two papers, one by Miss Caroline Coventry Haynes "The First Supplement to the Sullivant Moss Society Exchange List of Hepaticae of United States and Canada," and the other "New and Interesting Lichens from the State of Washington" by Mr. G. K. Merrill. This was followed by a paper by Dr. Otto E. Jennings on "Notes on the Mosses of Western Pennsylvania,' read by Mrs. Annie Morrill Smith. Mr. Edward B. Chamberlain followed, reading a paper by Miss Annie Lorenz on "Notes on Maine Hepaticae and a comparison with the Sarekgebirge Hepaticae."

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[1] Cf. Russow. Zur Kenntn. d. Subsec. u. Cymbif. Gr. europ. Torfm. 136. 1894.

[2] Om Sphagnaceernas Utbredning i Skandinavien. 1887.